Department of Pesticide Regulation

Paul Helliker
Director

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Winston H. Hickox
Secretary, California Environmental Protection Agency

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HSM-03028
(No. assigned after original issuance of memo)

Mr. David Robinson
County Agricultural Commissioner
Merced County Department of Agriculture
2139 Wardrobe Avenue
Merced, California 95340

Dear Mr. Robinson:

On June 12, the Department of Pesticide Regulation's (DPR) Worker Health and Safety Branch met with Ms. Heidi Wong of your office. Also in attendance were Mr. Dan Lynch and Mr. Vic Acosta of DPR's Enforcement Branch. The purpose of this meeting was to view transplant equipment and ascertain the potential for worker exposure to pesticides applied during the transplant process. Because of the nature of the application procedure, Worker Health and Safety's Industrial Hygiene Program (IHP) was brought in for consultative review of the transplant equipment. IHP was primarily interested in discovering any evidence of overt contact with pesticide materials or potential routes of exposure with no direct signs available at the time of the inspection.

This first transplant operation visited was with Bianchi & Sons. Their operation was using a wheeled tractor equipped with saddle water tanks. This tractor pulled an 8-person transplant rig equipped with "finger" transplanters. We were informed that this is called a "Linden Planter". On observing the transplant operation, it was noted that the hose from which the fungicide/water mixture flowed out of was located within an enclosed area. The exit point of the mixture was sufficiently low within this enclosure to avoid casual worker contact with the flow. The liquid flow also did not appear to be generating any noticeable aerosols. Additionally, the lower sections of all the transplant worker's pants leg and their shoes were clearly dry. Given the amount of dust generated by this procedure, any dampness would have been distinctly visible on either the pants or shoes. It would appear that the design of the transplanter's pesticide delivery system provides sufficient protection to the lower extremities of the persons riding on the transplanter.

Though there did not seem to be a potential route for exposure from the outflow of the fungicide/water mixture, there were two other observed activities that could have exposure consequences. Workers have direct contact with the mud-caked transplant fingers when loading a plant. The transplant fingers are in direct contact with freshly treated soil and are covered with pesticide-treated mud during revolutions. This mud is a direct source of pesticide exposure. All

workers on the transplant rig were noted as wearing disposable synthetic gloves and none of the gloves appeared to be excessively loaded with soil. Nonetheless, the use of chemical resistant gloves should be required under these conditions. Additionally, some mud was noted on the thighs of workers seated on the rig, most likely from contact with the material on the hands. The use of chemical resistant or waterproof aprons may be essential to provide adequate protection from this source of contamination.

A second condition of concern was the activity of persons following the transplant rig, manually inserting plants into spots missed by the transplant rig crew. These "skip planters" would insert plants into the freshly treated soil, coming into hand contact with the pesticide-laden mud. Once again, direct contact with the soil is a potential route of exposure. The use of gloves is strongly recommended.

One other operational transplant rig was available for inspection. This rig, operated by a company called Live Oak Farms, was also a finger planter. The major difference between it and the previously viewed rig was there appeared to be considerably less pesticide mixture on the soil surface. All parts that contacted the soil were much cleaner than the Bianchi rig. The reasons for this difference are not exactly known, but deeper injection of the pesticide mixture, and possibly lower application volume rates may be responsible. Once again, the transplant rig workers were wearing synthetic gloves, but they were also wearing waterproof aprons. No obvious unprotected contact, either of the lower extremities or the hands, was noted. However, the skip planters were not wearing gloves.

A third transplanter, used by D&S Growers, was also seen in operation, but this transplanter (for watermelons) did not involve the use of any pesticides in the planting water. It was of a different design than the previous two, using a spike-equipped wheel to open a hole in the soil, into which one worker placed a plant and a second, following worker adjusted the plant and the surrounding soil to complete the planting process. We were told that this rig never used pesticides in its planting water.

We also examined two non-operational rigs. These rigs were variations on the transplanters seen at Bianchi and Live Oak. The only notable difference with one of the rigs was the use of a "planting-wheel" instead of finger planters. However, it can be assumed that the mud transfer problem of the finger planters would also be found in the planting-wheel configuration.

The use of pesticides in transplant water does not appear to result in noticeable contamination to workers via any direct route, at least in the equipment reviewed. Rather, contact with pesticide-treated soil brought up by the transplanting device seems to be the most probable route of potential pesticide exposure. To mitigate this exposure potential, the following recommendations are proposed:

1. All plant-handling transplant workers should wear adequate hand protection.

2. All plant-handling transplant workers who are riding on the transplant rig should wear a waterproof or chemically resistant apron that, at a minimum, protects the wearer's thighs.

3. Any application rig that deviates from the engineering controls exhibited in the inspected transplant rigs should be assessed, during operation, for their ability to protect workers from exposure.

The IHP provides consultative services for the appropriateness and effectiveness of exposure mitigation measures. The IHP does not assess the regulatory compliance of facilities or operations it inspected. The above recommendations are made to reduce exposure. If you have questions about compliance with pesticide law and regulations, please contact Mr. Dan Lynch from DPR's Central Regional Office, Enforcement (ENF) Branch.

Sincerely,

Original signed by H. R. Fong

Harvard R. Fong, CIH
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Worker Health and Safety (WH&S) Branch
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cc: Mr. Dan Lynch, Central Regional Office/ENF Branch
Ms. Heidi Wong, Merced County Ag. Commissioners (CAC) Office
Mr. Scott Paulsen, DPR ENF Branch
Mr. Vic Acosta, DPR ENF Branch
Mr. Jim Shattuck, DPR ENF Branch
Mr. Chuck Andrews, WH&S Branch
Ms. Sue Edmiston, WH&S Branch
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